Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-39 (Cancelled)

Claim 40 (Currently Amended): A method of detecting motion in nanoscale structures, comprising:

providing a molecular motor ~~structure~~ having a rotating arm;

attaching a rod-shaped nanoparticle to the rotating arm of the molecular motor ~~structure~~ so that the nanoparticle rotates with the rotating arm of the molecular motor ~~structure~~, wherein the nanoparticle has a first surface and a second surface, and wherein the first surface has greater area than the second surface;

exposing a light to the rod-shaped nanoparticle, wherein ~~a first surface of~~ the nanoparticle scatters a first polarized wavelength of the light when the nanoparticle is in a first position and ~~a second surface of~~ the nanoparticle scatters a second polarized wavelength of the light when the nanoparticle is in a second position;

filtering the first and second wavelengths of the light through a polarizing filter to detect rotational motion by observing alternating first and second wavelengths of the light; and

wherein the detection of a target molecule is enabled when the target molecule forms a specific structural link between the molecular motor and the rod-shaped nanoparticle such that the molecular motor causes the rod-shaped nanoparticle to rotate.

Claim 41 (Cancelled)

Claim 42 (Previously Presented): The method of Claim 40 wherein the rod-shaped nanoparticle is a gold nanorod.

Claim 43 (Previously Presented): The method of Claim 42 wherein the first polarized wavelength of the light is longer than the second polarized wavelength of the light.

Claim 44 (Previously Presented): The method of Claim 43 wherein the first polarized wavelength of the light is red light and the second polarized wavelength of the light is green light.

Claim 45 (Currently Amended): The method of Claim 40 wherein the molecular motor ~~structure~~ is an F1-ATPase enzyme.

Claim 46 (Currently Amended): The method of Claim 40 wherein the specific structural link between the molecular motor and the rod-shaped nanoparticle includes ~~further including~~ the step of disposing a detection DNA strand between the nanoparticle and the molecular structure, wherein the detection DNA strand hybridizes with a target DNA strand, if the target DNA strand matches the detection DNA strand, to form a structural link between the molecular structure and the nanoparticle[[,]].

Claims 47-48 (Cancelled)

Claim 49 (Currently Amended): The method of Claim [[47]] 40 wherein the rod- shaped nanoparticle is a gold nanorod.

Claim 50 (Previously Presented): The method of Claim 49 wherein the first polarized wavelength of the light is longer than the second polarized wavelength of the light.

Claim 51 (Previously Presented): The method of Claim 50 wherein the first polarized wavelength of the light is red light and the second polarized wavelength of the light is green light.

Claim 52 (Currently Amended): The method of Claim [[47]] 49 wherein the molecular motor ~~structure~~ is an F1-ATPase enzyme.

Claims 53- 59 (Cancelled)

Claim 60 (Currently Amended): A method of detecting motion in nanoscale structures comprising:

providing a molecular motor ~~structure~~ having a rotatable arm;

attaching a nanoparticle having a first axis and a second axis to the rotatable arm of the molecular motor ~~structure~~ so that the nanoparticle rotates with the rotating arm of the molecular motor ~~structure~~, the first axis of the nanoparticle having a greater length than the second axis;

disposing a detection DNA strand between the nanoparticle and the molecular motor ~~structure~~, wherein the detection DNA strand hybridizes with a target DNA strand such that if the target DNA strand matches the detection DNA strand they form a structural link between the molecular motor ~~structure~~ and the nanoparticle causing the nanoparticle to rotate;

providing light from a fixed location;

altering a path of the light from the fixed location to create an oblique angle with respect to the first axis and second axis of the nanoparticle;

exposing the light from the altered path onto the nanoparticle, the first axis of the nanoparticle scattering a first polarized wavelength of the light when the nanoparticle is in a first position of rotational motion, the second axis of the nanoparticle scattering a second polarized wavelength of the light when the nanoparticle is in a second position of rotational motion;

providing an iris which passes the first and second polarized wavelengths of scattered light and blocks unscattered light;

providing a polarizing filter which is aligned only to the first and second polarized wavelengths of the light wherein the polarizing filter blocks light not aligned with the filter;

processing the first and second polarized wavelengths of light onto first and second channels, respectively; and

detecting alternating first and second polarized wavelengths indicating motion of the nanoparticle and the molecular structure indicating detection of the target DNA strand.